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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,779	02/01/2005	Shinji Sakashita	265060US0PCT	1756

22850	7590	09/10/2007
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EXAMINER	
VELASQUEZ, VANESSA T	

ART UNIT	PAPER NUMBER
1709	

NOTIFICATION DATE	DELIVERY MODE
09/10/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/522,779

Applicant(s)

SAKASHITA ET AL.

Examiner

Vanessa T. Velasquez

Art Unit

1709

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 February 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>02/01/2005 and 12/11/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Status of Application

Claims 1-8 are pending and are presented for examination.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file. The certified copy has been filed in parent application JP 2002-229433 on August 7, 2002.

Information Disclosure Statement

Two information disclosure statements (IDS) were submitted on February 1, 2005 and December 11, 2006. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statements. Please refer to applicants' copy of the PTO-1449 (completed IDS) submitted herein.

Drawings

Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. Figure 1 is identical to Figure 1 of EP 1 126 139 A2 issued to Miyamoto & Yashiki. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid

Art Unit: 1709

abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Abstract

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because of incorrect grammar and improper idiomatic English. The first and third sentences are sentence fragments.

Art Unit: 1709

Complete sentences are required. Awkward phrases and modifiers are present throughout the abstract. Readability may be improved by writing shorter sentences that contain only one main idea. Revision is required. See MPEP § 608.01(b).

Arrangement of the Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Specification Objection

35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms that are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are:

(a) **Dependent clause not separated by a comma.** (e.g., p. 1: "...depending on the environment it may therefore absorb ...")

(b) **Inconsistent description.** (e.g., p.4: "The titanium alloy material described herein is a titanium alloy material ... formed by a Ti-Al alloy containing Al ... the remainder being residual Ti and unavoidable impurities." The tables in the specification indicate that the titanium alloy material consists of 0.50-3.0% Al and unavoidable impurities, the balance Ti.)

(c) **Incorrect diction.** (e.g., p.4: "The titanium alloy material described herein is a titanium alloy material ... formed by a Ti-Al alloy containing Al ... the remainder being residual Ti and unavoidable impurities." MSN Encarta dictionary defines residual as something "remaining after the majority of something has been removed." The alloy is primarily titanium according to the specification (Tables 1-3).)

(d) **Verboseness.** (e.g., p. 5: "In this case, 50% or more of the oxide film is preferably formed from a crystalline oxide." See also p.10: "This effect is

Art Unit: 1709

exhibited regardless of the crystalline structure of the crystalline oxide in the oxide film...")

(g) **Range of percentages not definite.** (e.g., p. 6: "Consequently, the lower limit of the Al content was set at 0.50%, but it is preferably 1.0% or more." The lower limit is open-ended and could be any percentage greater than 1.0%.)

(h) **Two adjacent dependent clauses listed consecutively.** (e.g., p. 6: "If cold rolling is performed under a reduction of 75%, if the Al content is within the range ...")

(i) **Unclear description.** (e.g., p. 11: "The lower limit of the Al content in the Al concentration layer is approximately 0.8% from the minimum difference between the lower limit of the Al content of the bulk part and the Al amount of the bulk part.")

The examples indicated above are by no means an exhaustive list. The entire specification should be considered during revision.

Claim Objections

1. Claim 1 is objected to because of the following informality: Phrase in parentheses. Parenthetical notation is unnecessary. Weight percent (wt%) or mass percent (mass%) need only appear once. Any % used thereafter will be assumed to be percent by mass. Appropriate correction is required.

Art Unit: 1709

2. Claim 4 is objected to because of the following informality: Verboseness.

Crystalline clearly refers to the oxide. There is no need to repeat oxide twice.

Appropriate correction is required.

3. Claims 5 and 6 are objected to because of the following informality: Awkward phrasing. The phrase "Al concentration layer" is interpreted to mean a layer that is concentrated with Al. The phrase is in close proximity to the phrase "Al concentration," which has a normal meaning of the concentration of Al in a given composition. It is recommended that a different term be used to describe the concentrated Al layer because its appearance is nearly identical to "Al concentration," and the two terms together may lessen readability of the claims. "Doped Al layer" may be more appropriate to describe the concentrated Al layer without causing confusion. Appropriate correction is required.

Claim Rejections - 35 USC § 112, 2nd

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 does not point out and distinctly claim the subject matter that applicant regards as the invention because the claim is open to a number of interpretations. The phrase "a titanium alloy material ... formed from Al: 0.50-3.0%" suggests that a

Art Unit: 1709

precursor compound 0.50-3.0% Al is used in the formation of the alloy. The language could also suggest that the "Ti-Al alloy comprising residual Ti and unavoidable impurities" is an invention separate from the titanium alloy material first mentioned. In another possibility, the Ti-Al alloy may also be interpreted as being a precursor or intermediate product in the reaction to produce the titanium alloy material. Furthermore, "titanium alloy" and "Ti-Al alloy" can be construed as describing the same material. The specification, however, supports a titanium alloy comprising 0.5-3.0% Al and unavoidable impurities, the balance titanium (see Table 1). It is advised that compositions be described unambiguously and that distinct terms be used to refer to entirely different compounds.

The terms "basic" and "superior" in claim 1 are relative terms that render the claim indefinite. The terms "basic" and "superior" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is unclear the extent to which a structural material is "basic." In addition, the hydrogen absorption properties are not quantified. As a result, the level to which the properties are "superior" is not known.

The term "which" of claim 1 in the phrase "which has superior hydrogen absorption properties" can refer to any number of preceding elements of the sentence. It is uncertain what element has superior hydrogen absorption properties.

Art Unit: 1709

Claims 2-8 are rendered unpatentable in view of claim 1. Claims 2-8 rely on the term "titanium alloy material," which is poorly defined in claim 1 according to the reasons stated above.

Claim 2 recites the limitation "the titanium alloy material according to claim 1, wherein the content of Fe, Mo, Ni, Nb and Mn which are present as impurities is suppressed." There is insufficient antecedent basis for this limitation in the claim. It is suggested that the claim be written "wherein the impurities are Fe, Mo, Ni, Nb, and Mn."

Claims 5 and 6 state the presence of an Al concentration in the range 0.8-25%, but it is unclear to which layer this Al concentration refers. The Al concentration range can be construed as further limiting the Al concentration of the Al concentration layer or the Al concentration of the bulk.

Claim 7 recites the limitation "the titanium alloy material according to claim 5, wherein the thickness of the Al concentration layer is 0.10-30 μm ." There is insufficient antecedent basis for the limitation in the claim. It is suggested that the claim be written "wherein the Al concentration layer has a thickness of 0.10-30 μm ."

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1709

7. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyamoto & Yashiki (EP 1 126 139 A2).

Claim 1 is drawn to a titanium alloy material comprising titanium, 0.50-3.0% by mass of Al, and unavoidable impurities.

Claim 8 describes an intended use of the titanium alloy material in claim 1.

Miyamoto teaches a titanium alloy comprising 0.5-2.3% by mass of Al, inevitable impurities, and Ti the balance ([0009]). Although the range of the mass percent of Al in Miyamoto does not encompass the entire range specified by the instant invention, Miyamoto still anticipates claim 1 because 0.5-2.3% falls within the range of the claimed invention. Refer to MPEP § 2131.03 Section I-II as needed. While claim 8 includes a clause describing intended use, it is still drawn to a composition claim. Because intended use is not accorded patentable weight, claim 8 is rendered unpatentable in view of claim 1.

Claim Rejections - 35 USC § 102/103

8. Claim 2 is rejected under 35 U.S.C. 102(b) as anticipated by Miyamoto & Yashiki (EP 1 126 139 A2). In the alternative, claim 2 is rejected under 35 U.S.C. 103(a) as obvious over Miyamoto & Yashiki (EP 1 126 139 A2) in view of Sakiyama et al. (JP 04143235 A).

Claim 2 further limits claim 1 by requiring the following impurities to be present in the following amounts: Fe, 0.15% or less; Mo, less than 0.10%; Ni, less than 0.20%; Nb, less than 1.0%; and Mn, less than 1.0%.

Art Unit: 1709

The prior art and reasoning used to reject claim 1 apply to claim 2 because claim 2 depends on claim 1. Miyamoto further discloses that “any alloying element other than Al *may be incorporated* [in the titanium alloy] so far as the feature of the present invention is not lost” (emphasis added) ([0009]). This statement implies that the titanium alloy of Miyamoto can include some or no impurities. The ranges listed in claim 2 of the instant application embrace zero percent; thus, Miyamoto reads on all features of the instant invention as described in claim 2.

In the alternative, Miyamoto reads on all features of claim 2 as stated above; however, Miyamoto neither identifies particular elements nor lists acceptable amounts of impurities in the titanium alloy of his invention. Sakiyama teaches a titanium alloy containing the following alloying elements: Al, Mo, Ni, and Fe (Abstract). Attention is drawn to Line 83 (Sakiyama – p. 228 Table 1), wherein a sample titanium alloy contains the following elements: Al 3.0 wt%; Mo 0.05 wt%; Ni 0.05 wt%; and Fe, 0.05 wt%. The discrete values of Al, Mo, Ni, and Fe lie within the ranges specified by claim 2 of the instant application. Although the alloying elements of Sakiyama’s invention do not include Nb and Mn, the ranges in claim 2 encompass zero percent; thus, Sakiyama covers all features not covered by Miyamoto.

One of ordinary skill in the art could add Mo, Ni, and Fe in the aforementioned amounts to the titanium alloy of Miyamoto. At the time of the invention, one of ordinary skill in the art would have been motivated to add these elements because they “improve the strength and workability of a titanium alloy” (Sakiyama – Abstract). Sturdier and safer structures could be constructed using stronger alloys.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto & Yashiki (EP 1 126 139 A2) in view of Yen (*Corrosion Science* 1999, 2031-2051).

Claim 3 further limits claim 1 by the addition of an oxide film 1.0 nm – 100 nm thick on the titanium alloy material.

The prior art and reasoning that apply to claim 1 also apply to claim 3 because claim 3 depends on claim 1. Miyamoto teaches the composition of the titanium alloy ([0009]) in claim 1, but fails to teach an oxide layer. Yen, however, discloses oxide layers of several thicknesses (e.g., 27 nm, 37 nm, 50 nm) on commercial pure titanium (Table 3).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the alloy composition of Miyamoto by growing the oxide layer disclosed by Yen. One having ordinary skill in the art would have been motivated to grow an oxide layer because the rate at which hydrogen enters titanium is decelerated by the presence of a thermally grown oxide (Yen – Abstract; Figure 3). Slowing the rate at which hydrogen permeates titanium decreases hydrogen embrittlement of the metal. Hydrogen weakens the structural integrity of titanium; thus, preventing that condition would lead to more robust materials for structures subjected to hydrogen-rich environments.

30. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto & Yashiki (EP 1 126 139 A2) in view of Yen (*Corrosion Science* 1999, 2031-2051), and further in view of Nakayama (JP Pat. 61276996 A).

Claim 4 further limits claim 3 by requiring that the oxide be at least 50% crystalline.

The prior art and reasoning that apply to claims 1 and 3 also apply to claim 4 because claim 4 depends directly on claim 3 and inherits all limitations of claim 1. Miyamoto in view of Yen teaches a titanium alloy material (Miyamoto) and an oxide layer (Yen), but they (Miyamoto in view of Yen) do not specifically teach a crystalline oxide. Nakayama, however, teaches the formation of a crystalline oxide on titanium alloys. The crystalline oxide has excellent chemical, physical, and mechanical characteristics (Nakayama – Abstract). Though Nakayama does not state the

Art Unit: 1709

percentage the oxide is crystalline, it is routine practice to optimize percentages to maximize the performance of a product. Refer to MPEP § 2144.05 II A as needed.

It would have been obvious to one of ordinary skill in the art to modify the oxide of Yen by growing it such that it was crystalline rather than amorphous. One of ordinary skill in the art would be motivated to make such a modification because the highly crystalline oxide may increase the chemical resistance of the titanium alloy (Nakayama – Abstract). An alloy with increased chemical resistance could be used in structures subjected to chemically harsh environments.

12. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto & Yashiki (EP 1 126 139 A2) in view of Dearnaley et al. (U.S. Pat. 4,465,524).

Claim 6 further limits claim 1 by the addition of an Al concentration layer on the bulk titanium alloy material.

The prior art and reasoning that apply to claim 1 also apply to claim 6 because claim 6 depends on claim 1. Miyamoto teaches the composition of the titanium alloy ([0009]) in claim 1, but fails to teach an Al concentration layer. Dearnaley teaches doping the surface of a titanium alloy with a metal such as aluminum. While Dearnaley does not teach a specific concentration of dopant metal in the alloy, it is routine practice to optimize such concentrations in order to obtain the best performance possible. Refer to MPEP § 2144.05 II A as needed.

It would have been obvious to one of ordinary skill in the art to dope the top layer of titanium alloy with a concentration of aluminum higher than the concentration of aluminum in the bulk. One of ordinary skill in the art would be motivated to dope the

Art Unit: 1709

alloy at the time of the invention was made because an aluminum coating improves the wear resistance of titanium (Dearnaley – Abstract). The ability of the titanium alloy to resist wear increases its durability.

13. Claims 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto & Yashiki (EP 1 126 139 A2) in view of Yen (*Corrosion Science* 1999, 2031-2051), and further in view of Nakayama (JP Pat. 61276996 A) and Dearnaley et al. (U.S. Pat. 4,465,524).

Claim 5 further limits claim 3 by the addition of with a doped aluminum layer that lies between the oxide layer of claim 3 and the bulk material of claim 1.

Claim 7 further limits claim 5 by requiring the doped aluminum layer be between 0.10 μm and 30 μm .

The prior art and reasoning that apply to claims 1 and 3 also apply to claims 5 and 7 because claims 5 and 7 depend on claim 3 and inherit all features of claim 1. Miyamoto in view of Yen further in view of Nakayama teaches the titanium alloy material and crystalline oxide layer; however, they (Miyamoto in view of Yen further in view of Nakayama) fail to teach a doped aluminum layer. Dearnaley teaches the presence of a doped aluminum layer. Therefore, the four references combined teach all the elements regarding the oxide and aluminum layers. It is routine practice to optimize such a thickness in order to obtain the best performance possible. Refer to MPEP § 2144.05 II A as needed. It would have been obvious to one of ordinary skill in the art at the time of the invention to grow an oxide layer on top of the doped aluminum layer and bulk titanium alloy. One of ordinary skill in the art would have been motivated to make such

Art Unit: 1709

a modification because the oxide and doped layers improve the hydrogen-absorption resistance and durability of the alloy, respectively (Yen – Abstract; Figure 3; Dearnaley – Abstract). The presence of both layers improves the chemical and physical properties of the alloy, increasing its quality and utility in construction.

Conclusion

No claims are allowed.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

(1) **U.S. Pat. 4,555,275**. Tobin teaches forming a bi-layer on an alloy (e.g., titanium alloy) to reduce the permeation of hydrogen atoms. The bi-layer comprises an intermediate layer of vanadium and an oxide (e.g., alumina).

(2) **U.S. Pat. 5,395,461**. Taki et al. teach the presence of an oxide 15-500 nm thick on a titanium alloy. The oxide acts to protect the alloy from hydrogen diffusion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa T. Velasquez whose telephone number is 571-270-3587. The examiner can normally be reached on Monday-Friday 8:00 AM-5:30 PM EDT.

Art Unit: 1709

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached at 571-272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VTV

A handwritten signature in black ink, consisting of a series of loops and strokes, positioned to the left of the printed name.

VICKIE Y. KIM
SUPERVISORY PATENT EXAMINER